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March 9, 2021

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772
Attention: Mr. Alex Baylor

RE: Indoor Air Quality Assessment, Mary Harris "Mother" Jones Elementary School
Purchase Order: 734977
ATI Project Number: 21-606

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) assessment at Mary Harris "Mother" Jones Elementary School on January 26, 2021 and follow-up assessments on February 27, 2021 and March 6, 2021. The assessments' key findings are in the enclosed Executive Summary, and the official laboratory reports for total fungal spore trap sampling are enclosed in Appendix A.

Thank you for the opportunity to provide Industrial Hygiene services for Prince George's County Public Schools. If you have any questions regarding this report, please contact us at (202) 643-4283.

Sincerely,
**ATI, INC.**

Reviewed By:

Courtney E. McCall
Project Manager

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

# Indoor Air Quality Assessment Report

Prince George's County Public Schools
Mary Harris "Mother" Jones Elementary School
2405 Tecumseh Street
Adelphi, MD 20783

Prepared for:

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772

**March 9, 2021**

Submitted by:

ATI Job # 21-606

# Table of Contents



# List of Tables



# Appendices

# Abbreviations and Acronyms

| | |
|---|---|
| **AHU** | Air-Handling Unit |
| **AIHA** | American Industrial Hygiene Association |
| **ASHRAE** | American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| **ASTM** | American Society for Testing and Materials |
| **CO** | Carbon Monoxide |
| **$CO_2$** | Carbon Dioxide |
| **EMLAP** | Environmental Microbiology Laboratory Accreditation Program |
| **HVAC** | Heating, Ventilating, And Air-Conditioning |
| **IAQ** | Indoor Air Quality |
| **NIST** | National Institute for Standards and Technology |
| **NVLAP** | National Voluntary Laboratory Accreditation Program |
| **RH** | Relative Humidity |
| **Rev.** | Revision |

**Abbreviations involving scientific volume and measurements involving media or water sampling**

| | |
|---|---|
| **Spores/$m^3$** | Mold spores per cubic meter of air |
| **LPM** | Liters Per Minute |
| **NTE** | Not to exceed |
| **°F** | degree Fahrenheit |
| **PPM** | Parts Per Million |

# 1 Executive Summary

ATI conducted a proactive Indoor Air Quality (IAQ) assessment on January 26, 2021, at Mary Harris "Mother" Jones Elementary School, located at 2405 Tecumseh Street, Adelphi, Maryland, and follow-up assessments on February 27, 2021, and March 6, 2021, in select rooms that warranted further inspection.

The initial assessment on January 26, 2021 included a visual assessment of randomly selected classrooms and other frequently occupied spaces, such as the cafeteria/gym, the main office, and randomly selected classrooms, for potential IAQ contributors and pathways. Rooms 210 and 247 had unusual fungal spore concentrations during the initial assessment and were selected for a follow-up assessment on February 27, 2021 after actions were taken to reduce the presence of mold and repair any water issues discovered. ATI reassessed these two rooms on March 6, 2021 after *Aspergillus/Penicillium*-like spore concentrations were still elevated during the February 27, 2021 assessment. As part of the assessments, ATI measured common IAQ comfort parameters, including temperature, relative humidity, carbon dioxide, and carbon monoxide. Also, ATI collected total fungal air samples on spore trap cassettes for microbiological analysis.

The following is a summary of the key findings from these assessments:

1. Two of the tested spaces had a temperature less than the ASHRAE recommended winter range of 68°F - 75°F during the initial assessment. During the first reassessment, the temperature in Classrooms 247 was less than the ASHRAE recommended winter range. During the second reassessment, the temperature in Classrooms 247 and 210 were less than the ASHRAE recommended winter range. However, both reassessments occurred on weekends when a more energy efficient HVAC mode was likely functioning.
2. The relative humidity in all tested spaces during the three assessments was less than the ASHRAE maximum recommended relative humidity of 65%. During the initial assessment, all tested spaces except the Multipurpose Room had a relative humidity less than 30%. During the March 6 reassessment, both tested spaces had a relative humidity less than 30%.
3. Carbon dioxide concentrations in all tested spaces during the three assessments were less than the ASHRAE limit for carbon dioxide, relative to the outdoor carbon dioxide concentration on the day of each assessment.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces for the three assessments.
5. The measured *Aspergillus/Penicillium*-like spore concentrations in Classrooms 247 and 210 during the initial assessment on January 26, 2021 suggested some degree of indoor spore amplification and were greater than the typical indoor occupied space.
6. During the February 27, 2021 reassessment, the *Aspergillus/Penicillium*-like mold spore concentration in Classroom 247 decreased, yet the concentration in Classroom 210 increased. Both spaces still had *Aspergillus/Penicillium*-like mold spore concentrations greater than a typical indoor occupied space. After additional mold abatement measures, ATI retested both rooms on March 6, and the *Aspergillus/Penicillium*-like mold spore concentrations both decreased to an acceptable concentration, a spore reduction of 94% to 99%. ATI has no further recommendations.

# 2 Assessment Methods

Courtney McCall, Industrial Hygienist of ATI, Inc. conducted the initial visual assessment and air sampling on January 26, 2021. Sampled rooms were randomly selected and accounted for approximately 10% of classrooms or a minimum of five samples. Ms. McCall documented visual observations at the time she collected the air samples. Also, she conducted a follow-up inspection on February 27, 2021, in Rooms 247 and 210 after they were treated for mold presence. On March 6, 2021, Mr. Sama Wanigasundara, Industrial Hygienist, of ATI conducted the second reassessment after the concentrations in both reassessed spaces were still greater than the concentrations in a typical indoor occupied space. ATI references the American Society of

Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) *Standard 62.1 – 2016* and ASHRAE *Standard 55 – 2017* when providing IAQ services to clients. ASHRAE is an industry leader on energy efficiency and indoor air quality.

All measurements and air samples were collected between three-six feet from floor elevation, which represents a typical adult breathing zone, and away from air-supply and return diffusers. Real-time direct readings for temperature, relative humidity, carbon dioxide ($CO_2$), and carbon monoxide (CO), were measured with a calibrated TSI Q-Trak 7575-X Meter and attached 982 Probe.

Total fungal air samples were collected with a field calibrated Buck BioAire High-Volume Sampling Pump on Zefon Air-O-Cell spore-trap cassettes at a flow rate of 15 liters per minute for five minutes, for a sample volume of 75 liters. AMA Analytical Services, Inc. of Lanham, MD analyzed the samples using direct microscopic examination per ASTM D7391, which spores both viable and non-viable mold spores and particulates, which combined yields total fungal results. AMA participates in the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for general laboratory performance and management, and the American Industrial Hygiene Association (AIHA) for Environmental Microbial Laboratory Accreditation Program (EMLAP). The AMA laboratory reports are included in Appendix A.

# 3 Visual Observations

Table 1 lists the areas, conditions, observations, and other pertinent details related to the initial and follow-up IAQ assessments. On both dates of sampling, few occupants were present in the school because of the COVID-19 global pandemic.

**Table 1: Visual Observations and Sampling Locations**

| Sample Location | January 26, 2021 Observations |
|---|---|
| Media Center | • One occupant at the time of sampling<br>• Room was approx. 3,000 square feet<br>• Approx. seven adjoining offices and an emergency exit were present<br>• Hundreds of books were present and computer carts and laptops stored nearby<br>• Main section of the room had clean ceiling tiles<br>• Near Room 230 Periodical Storage, seven ceiling tiles were damaged<br>• On right side of room (when entering the room), water damaged ceiling tiles were laying on the ground along the sprinkler near Room 224 |
| Multipurpose Room | • No occupants directly in the room but workers were prepping food in the adjoining kitchen<br>• Approx. four ceiling tiles had water damage<br>• The room was storing student books, materials, and the stage had stacks of books |
| Music Room 150 | • No occupants at time of sampling<br>• No signs of major water intrusion<br>• Some stained ceiling tiles, area mostly clean with some minor debris on floor<br>• Air supplies had dirt load present<br>• Tile floor and ceiling tiles had dust present<br>• An area rug was in the room<br>• Materials on the window sill were covered in plastic |
| Classroom 210 | • No occupants at time of sampling<br>• Desks were stacked in the rear<br>• Paper and student supplies are pushed to perimeter of room |

| Sample Location | January 26, 2021 Observations |
|---|---|
| Classroom 301 | • No occupants at time of sampling<br>• Area rug was rolled up<br>• Student supplies and materials were stored around the perimeter of the room<br>• Three ceiling tiles had some staining near the windows<br>• Wall ventilator had some trace dust |
| Classroom 336 | • No occupants at time of sampling<br>• Student papers and materials were stored throughout the room<br>• Three water damaged ceiling tiles were in the rear of the room<br>• Wall ventilator appeared clean |
| Classroom 330 | • No occupants at time of sampling<br>• One large area rug was present and pretty clean<br>• Wall ventilator and ceiling tiles appeared clean |
| Classroom 247 | • No occupants at time of sampling<br>• Wall ventilator was clean<br>• Two stained ceiling tiles were present |
| Computer Lab | • No occupants at time of sampling<br>• One oscillating fan was operating<br>• Room had a low ceiling and air supplies and returns were dusty<br>• Approx. 25 computers were present and student materials were stored throughout the space |
| Main Office | • No occupants at time of sampling<br>• In main area, three desks and computers were present<br>• Papers on desk and housekeeping appeared sufficient<br>• Approx. nine adjoining rooms in the attached hallway |
| Outdoors | • Collected sample in front parking area near trees<br>• Active light precipitation during sampling<br>• Little to no foot traffic nearby |
| **Sample Location** | **February 27, 2021 Reassessment Observations** |
| Classroom 247 | • Space was not occupied during sampling<br>• Student chairs were stored on desks and floors under desks were cleaned.<br>• Sink has a small drip<br>• Mice droppings were present on a filing cabinet near the far side of the room (windows side) |
| Classroom 210 | • Space was not occupied during sampling<br>• Room does not appear to be dusted or vacuumed |
| Outdoors | • Rain ceased during sampling. Puddles were in the parking lot, near the sampler. Also, trees and grasses were nearby. |

| Sample Location | March 6, 2021 Reassessment Observations |
|---|---|
| Classroom 247 | • No occupants during the time of sampling<br>• No visible dust on floor or furniture<br>• Unit ventilator had no visible dust.<br>• No dust observed on filing cabinet. |

| Sample Location | March 6, 2021 Reassessment Observations |
|---|---|
| Classroom 210 | • No occupants during the time of sampling<br>• No visual signs of mold growth and odor<br>• No visible dust on floor or furniture<br>• Unit ventilator and returns had no visible dust |
| Outdoors | • Took sample in parking lot surrounded by trees<br>• Sunny clear skies and light wind |

# 4 Thermal Environmental Conditions for Human Occupancy

ASHRAE *Standard 55-2017, Thermal Environmental Conditions for Human Occupancy*, addresses thermal comfort in an office environment, which means that an employee wearing a normal amount of clothing feels neither too cold nor too warm. This standard discusses thermal comfort within the context of air temperature, humidity, and air movement and provides recommended ranges for temperature and humidity that are intended to satisfy 80% of occupants. The recommended ASHRAE ranges are referenced below by each comfort parameter.

## 4.1 Temperature

The ASHRAE standard establishes a winter comfort range of between 68°F and 75°F and a summer range of between 73°F and 79°F. The temperatures measured during the January 26, 2021 initial assessment and reassessment from February 27, 2021 and March 6, 2021 are summarized in Table 2. As indicated by the data in the table, temperatures in the school on January 26 averaged between 63°F and 70°F, with two locations having a temperature less than the ASHRAE recommended winter range. The school was not fully occupied on this testing date.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 27, 2021 after remediation actions were completed. ATI also reassessed the temperature in Classrooms 247 and 210, which averaged 62°F and 69°F, respectively, with Room 247 having a temperature less than the recommended range. On March 6, 2021, Classrooms 247 and 210 had an average temperature of 61°F and 67°F, respectively, both having a temperature less than the winter range. The two reassessments occurred on weekends when a more energy efficient HVAC mode was likely functioning.

**Table 2: Temperature**

| Sample Location | January 26, 2021 Initial Assessment °F | | | ASHRAE Standard °F |
|---|---|---|---|---|
| | Min | Max | Average | |
| Outdoors | 40 | 41 | 41 | N/A |
| **Indoors** | | | | |
| Media Center | 62 | 63 | 63 | 68°F - 75°F |
| Multipurpose Room | 65 | 67 | 66 | 68°F - 75°F |
| Music Room 150 | 69 | 70 | 70 | 68°F - 75°F |
| Classroom 210 | 70 | 70 | 70 | 68°F - 75°F |
| Classroom 301 | 70 | 70 | 70 | 68°F - 75°F |
| Classroom 336 | 68 | 69 | 69 | 68°F - 75°F |
| Classroom 330 | 68 | 68 | 68 | 68°F - 75°F |
| Classroom 247 | 67 | 69 | 68 | 68°F - 75°F |
| Computer Lab | 69 | 69 | 69 | 68°F - 75°F |
| Main Office | 70 | 70 | 70 | 68°F - 75°F |

| February 27, 2021 Reassessment Temperature in °F | | | | |
|---|---|---|---|---|
| Outdoors | 48 | 50 | 49 | N/A |
| **Indoors** | | | | |
| Classroom 247 | 60 | 64 | 62 | 68°F - 75°F |
| Classroom 210 | 67 | 70 | 69 | 68°F - 75°F |
| **March 6, 2021 Reassessment Temperature in °F** | | | | |
| Outdoors | 51 | 51 | 51 | N/A |
| **Indoors** | | | | |
| Classroom 247 | 61 | 61 | 61 | 68°F - 75°F |
| Classroom 210 | 66 | 67 | 67 | 68°F - 75°F |

## 4.2 Relative Humidity

Relative humidity is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 65%. ASHRAE *Standard 62.1-2016*, *Ventilation for Acceptable Indoor Air Quality,* recommends a maximum indoor relative humidity of 65% to prevent condensation of moisture on surfaces. Relative humidity less than 30% may result in drying of occupants' mucous membranes and skin. Relative humidity measurements for January 26, 2021, February 27, 2021, and March 6, 2021 are summarized in Table 3. As indicated by the data in the table, the average relative humidity ranged between 23% and 30% with all tested locations except one measuring both less than the ASHRAE maximum recommendation of 65% relative humidity and less than 30% relative humidity. The Multipurpose Room had an average relative humidity of 30%.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 27, 2021, after remediation actions were completed. On February 27, the relative humidity was 33% and 45% in Classrooms 247 and 210, respectively. Both classrooms had a relative humidity less than the ASHRAE maximum recommendation of 65% relative humidity and greater than 30% relative humidity, which is optimal. During the March 6 reassessment, the relative humidity was 18% and 21% in Classrooms 247 and 210, respectively. The relative humidity in both rooms were less than the ASHRAE maximum recommendation of 65% relative humidity but also less than 30% relative humidity, which can cause occupant discomfort.

**Table 3: Relative Humidity**

| Sample Location | January 26, 2021 Initial Assessment (% RH) | | | ASHRAE Standard (% RH) |
|---|---|---|---|---|
| | Min | Max | Average | |
| Outdoors | 62 | 63 | 63 | N/A |
| **Indoors** | | | | |
| Media Center | 28 | 30 | 29 | ≤ 65 |
| Multipurpose Room | 30 | 30 | 30 | ≤ 65 |
| Music Room 150 | 25 | 25 | 25 | ≤ 65 |
| Classroom 210 | 23 | 23 | 23 | ≤ 65 |
| Classroom 301 | 24 | 25 | 25 | ≤ 65 |
| Classroom 336 | 23 | 23 | 23 | ≤ 65 |
| Classroom 330 | 24 | 24 | 24 | ≤ 65 |
| Classroom 247 | 25 | 25 | 25 | ≤ 65 |
| Computer Lab | 24 | 26 | 25 | ≤ 65 |
| Main Office | 25 | 25 | 25 | ≤ 65 |

| February 27, 2021 Reassessment Relative Humidity (%RH) | | | | |
|---|---|---|---|---|
| Outdoors | 57 | 62 | 60 | N/A |
| **Indoors** | | | | |
| Classroom 247 | 44 | 45 | 45 | ≤ 65 |
| Classroom 210 | 31 | 34 | 33 | ≤ 65 |
| **March 6, 2021 Reassessment Relative Humidity (%RH)** | | | | |
| Outdoors | 17 | 17 | 17 | N/A |
| **Indoors** | | | | |
| Classroom 247 | 18 | 18 | 18 | ≤ 65 |
| Classroom 210 | 21 | 21 | 21 | ≤ 65 |

## 4.3 Carbon Dioxide

Carbon dioxide concentrations within an occupied building are a standard method used to gauge the efficiency of ventilation systems. Carbon dioxide is a by-product of human respiration and does not pose an acute health hazard alone. Elevated concentrations may suggest that insufficient fresh air is being supplied to an occupied space and/or that the ventilation system does not provide a sufficient rate of air exchange.

Research has indicated that buildings with adequately operating ventilation systems are able to remove odors generated by activities in an indoor office environment efficiently. ASHRAE *Standard 62.1-2016* states that comfort (odor) criteria with respect to human bioeffluents are likely to be satisfied if the ventilation can maintain indoor carbon dioxide concentrations less than 700 parts per million (ppm) greater than the outdoor air concentration. Typically, outdoor carbon dioxide concentrations range from 300 ppm to 450 ppm, with the higher range typically found in urban areas during peak rush hour.

Carbon dioxide concentrations for January 26, 2021 are summarized in Table 4. On the day of the assessment, the average outdoor carbon dioxide concentration was 372 ppm, which calculates to a maximum indoor concentration of 1,072 ppm (700 + 372). All tested locations indoors were less than the recommended maximum for the day of the assessment.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 27, 2021, after remediation actions were completed. The carbon dioxide concentrations measured during the reassessment are included in Table 4. The average outdoor carbon dioxide concentration on February 27, 2021 was 379 ppm, which calculates to a maximum indoor concentration of 1,079 ppm (700 + 379). The average outdoor carbon dioxide concentration on March 6, 2021 was 378 ppm, which calculates to a maximum indoor concentration of 1,078 ppm (700 + 378). Both retested rooms were less than the recommended maximum for their respective day of the reassessments.

**Table 4: Carbon Dioxide**

| Sample Location | January 26, 2021 Initial Assessment Concentration (parts per million) | | | ASHRAE Standard (ppm) NTE |
|---|---|---|---|---|
| | Min | Max | Average | |
| Outdoors | 368 | 375 | 372 | N/A |
| **Indoors** | | | | |
| Media Center | 393 | 404 | 399 | < 1,072 |
| Multipurpose Room | 400 | 404 | 402 | < 1,072 |
| Music Room 150 | 398 | 403 | 401 | < 1,072 |
| Classroom 210 | 417 | 419 | 418 | < 1,072 |
| Classroom 301 | 433 | 439 | 436 | < 1,072 |
| Classroom 336 | 409 | 417 | 413 | < 1,072 |

| Sample Location | January 26, 2021 Initial Assessment Concentration (parts per million) | | | ASHRAE Standard (ppm) NTE |
|---|---|---|---|---|
| | Min | Max | Average | |
| Classroom 330 | 410 | 411 | 411 | < 1,072 |
| Classroom 247 | 402 | 416 | 409 | < 1,072 |
| Computer Lab | 411 | 417 | 414 | < 1,072 |
| Main Office | 443 | 451 | 447 | < 1,072 |
| **February 27, 2021 Reassessment Concentration (parts per million)** | | | | |
| Outdoors | 378 | 380 | 379 | N/A |
| **Indoors** | | | | |
| Classroom 247 | 450 | 464 | 457 | < 1,079 |
| Classroom 210 | 409 | 429 | 419 | < 1,079 |
| **March 6, 2021 Reassessment Concentration (parts per million)** | | | | |
| Outdoors | 377 | 378 | 378 | N/A |
| **Indoors** | | | | |
| Classroom 247 | 460 | 461 | 461 | < 1,078 |
| Classroom 210 | 395 | 396 | 396 | < 1,078 |

## 4.4 Carbon Monoxide

Carbon monoxide is a colorless and odorless gas produced by the incomplete combustion of carbon containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are the major sources of carbon monoxide. ASHRAE recommends that carbon monoxide not exceed nine ppm indoors over an eight-hour time-weighted average. ATI measured carbon monoxide concentrations using a TSI Q-Trak model number 7575-X with an attached IAQ probe (model number 982). The instrument's carbon monoxide sensor has an error range of ± 3% of the reading or three (3) ppm, whichever is greater. As indicated by the data in Table 5, carbon monoxide concentrations for January 26, 2021 were less than the Q-Trak's detection limit throughout the school.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 27, 2021 and March 6, 2021 after remediation actions were completed. The carbon monoxide concentrations measured during the reassessment are included in Table 5. The carbon monoxide concentrations from the reassessment were also less than the Q-Trak's limit of detection and less than the EPA/ASHRAE recommended maximum of 9 ppm.

**Table 5: Carbon Monoxide**

| Sample Location | January 26, 2021 Initial Assessment Concentration (parts per million) | | | ASHRAE Standard (ppm) |
|---|---|---|---|---|
| | Min | Max | Average | |
| Outdoors | < 3 | < 3 | < 3 | N/A |
| **Indoors** | | | | |
| Media Center | < 3 | < 3 | < 3 | < 9 |
| Multipurpose Room | < 3 | < 3 | < 3 | < 9 |
| Music Room 150 | < 3 | < 3 | < 3 | < 9 |
| Classroom 210 | < 3 | < 3 | < 3 | < 9 |
| Classroom 301 | < 3 | < 3 | < 3 | < 9 |
| Classroom 336 | < 3 | < 3 | < 3 | < 9 |

| Sample Location | January 26, 2021 Initial Assessment Concentration (parts per million) | | | ASHRAE Standard (ppm) |
|---|---|---|---|---|
| | Min | Max | Average | |
| Classroom 330 | < 3 | < 3 | < 3 | < 9 |
| Classroom 247 | < 3 | < 3 | < 3 | < 9 |
| Computer Lab | < 3 | < 3 | < 3 | < 9 |
| Main Office | < 3 | < 3 | < 3 | < 9 |
| **February 27, 2021 Reassessment Concentration (parts per million)** | | | | |
| Outdoors | < 3 | < 3 | < 3 | N/A |
| **Indoors** | | | | |
| Classroom 247 | < 3 | < 3 | < 3 | < 9 |
| Classroom 210 | < 3 | < 3 | < 3 | < 9 |
| **March 6, 2021 Reassessment Concentration (parts per million)** | | | | |
| | | | | |
| Outdoors | < 3 | < 3 | < 3 | N/A |
| **Indoors** | | | | |
| Classroom 247 | < 3 | < 3 | < 3 | < 9 |
| Classroom 210 | < 3 | < 3 | < 3 | < 9 |

# 5 Total Fungal Air Sampling Results

Mold is carried indoors through building entrances, open windows, loading docks, foot traffic into buildings, and the HVAC system. To thrive indoors, mold requires a food source, proper temperature and humidity to foster its growth.

The January 26, 2021, February 27, 2021, and March 6, 2021 mold assessments sampled air using spore trap cassettes in randomly selected classrooms and other areas throughout the facility. These cassettes collect both viable spores, those capable of producing more fungal colonies, and non-viable spores, which cannot reproduce. Based upon recognized industry practices, indoor mold concentrations are compared with those detected outdoors, which are also known as ambient or baseline samples.

In normal circumstances, the diversity of spores identified indoors and outdoors should be similar with some exceptions. The high concentration of one or two species of fungal spores identified indoors and the absence of the same species outdoors can indicate a moisture problem with the potential to degrade the air quality. Fungi species present indoors are typically found at levels ranging from approximately 10-50% of their levels in the outdoor air, reflecting the filtering by the building's HVAC system.

The results from January 26, 2021 suggested unusual mold spore concentrations in Classrooms 247 and 210. The total ambient, outdoor spore concentration was 636 spores/$m^3$, with an *Aspergillus/Penicillium*-like spore concentration of 53 spores/$m^3$. Classroom 247 had the greatest total spore concentration of 34,563 spores/$m^3$, with *Aspergillus/Penicillium*-like spores being the predominant spores present at 34,086 spores/$m^3$. Classroom 210 had total spore concentrations of 1,007 spores/$m^3$ with *Aspergillus/Penicillium*-like being the predominant spore type with a concentration of 954 spores/$m^3$.

The *Aspergillus/Penicillium*-like spore concentration in Classroom 247 suggested some degree of indoor mold spore amplification has taken place, either currently or at some point in the past. The *Aspergillus/Penicillium*-like spore concentration in Classroom 210 was just slightly greater than typical indoor mold concentration, which could be cause from a relatively small amount of indoor mold growth, contamination from a prior moisture issue or from another affected area. ATI recommended evaluating Classrooms 247 and 210 and the surrounding areas to try and identify water sources, abate any mold issues and

clean the area before retesting the space. All other assessed spaces had a mold spore concentration that were typical for most indoor occupied spaces.

ATI conducted the reassessment in the two rooms on February 27, 2021, and the *Aspergillus/Penicillium*-like mold spore concentration in Classroom 247 decreased to 13,699 spores/m$^3$, but the *Aspergillus/Penicillium*-like mold spore concentration in Classroom 210 increased to 1,820 spores/m$^3$. Both spaces still had *Aspergillus/Penicillium*-like mold spore concentrations greater than a typical indoor occupied space and ATI recommended additional corrective actions to reduce the presence of airborne mold spores for these two spaces.

ATI reassessed Classrooms 247 and 210 for a second time on March 6, 2021, after corrective actions were completed, and the *Aspergillus/Penicillium*-like mold spore concentration in both spaces dropped significantly to concentrations typical of indoor occupied spaces. The reduction of 94% to 99% suggested that the corrective actions were successful in reducing the airborne mold spore concentrations in Classrooms 247 and 210. ATI has no further recommendations for cleaning or sampling at this time. Differences in concentrations between both dates of assessment are summarized in Table 6.

**Table 6: *Aspergillus/Penicillium* Concentration Comparison**
**Spores/m$^3$**

| Sample Location | January 26, 2021 Concentrations | February 27, 2021 Concentrations | March 6, 2021 Concentrations | % Change |
|---|---|---|---|---|
| Classroom 247 | 34,086 | 13,699 | 424 | - 99% |
| Classroom 210 | 954 | 1,820 | 53 | - 94% |

The official laboratory reports with spore trap samples collected on January 26, 2021, February 27, 2021 and March 6, 2021 are presented in Appendix A.

# 6 Summary of Findings

1. Two of the tested spaces had a temperature less than the ASHRAE recommended winter range of 68°F - 75°F during the initial assessment. During the first reassessment, the temperature in Classrooms 247 was less than the ASHRAE recommended winter range. During the second reassessment, the temperature in Classrooms 247 and 210 were less than the ASHRAE recommended winter range. However, both reassessments occurred on weekends when a more energy efficient HVAC mode was likely functioning.
2. The relative humidity in all tested spaces during the three assessments was less than the ASHRAE maximum recommended relative humidity of 65%. During the initial assessment, all tested spaces except the Multipurpose Room had a relative humidity less than 30%. During the March 6 reassessment, both tested spaces had a relative humidity less than 30%.
3. Carbon dioxide concentrations in all tested spaces during the three assessments were less than the ASHRAE limit for carbon dioxide, relative to the outdoor carbon dioxide concentration on the day of each assessment.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces for the three assessments.
5. The measured *Aspergillus/Penicillium*-like spore concentrations in Classrooms 247 and 210 during the initial assessment on January 26, 2021 suggested some degree of indoor spore amplification and were greater than the typical indoor occupied space.
6. During the February 27, 2021 reassessment, the *Aspergillus/Penicillium*-like mold spore concentration in Classroom 247 decreased, yet the concentration in Classroom 210 increased. Both spaces still had *Aspergillus/Penicillium*-like

mold spore concentrations greater than a typical indoor occupied space. After additional mold abatement measures, ATI retested both rooms on March 6, and the *Aspergillus/Penicillium*-like mold spore concentrations both decreased to an acceptable concentration, a spore reduction of 94% to 99%. ATI has no further recommendations.

We appreciate the opportunity to provide these IAQ testing services for you. If you have any questions, please contact us at (202) 643-4283.

Best,
**ATI, INC.**

Courtney E. McCall
Project Manager

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

# Appendix A: Laboratory Report and Chain of Custody

AMA Analytical Services, Inc.
Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 385304 | **Job Name:** | Mary Harris "Mother Jones" Elementary School | **Date Submitted:** | 01/26/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh St, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 02/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 02/02/2021 |
| **Attention:** | Courtney McCall | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **AMA Sample #** | 385304-1 | **AMA Sample #** | 385304-2 | **AMA Sample #** | 385304-3 |
| **Client ID** | 31638845 | **Client ID** | 31638830 | **Client ID** | 31638834 |
| **Analyst ID** | TLW | **Analyst ID** | TLW | **Analyst ID** | TLW |
| **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 |
| **Sample Condition** | Acceptable | **Sample Condition** | Acceptable | **Sample Condition** | Acceptable |
| **Debris Loading** | 1 | **Debris Loading** | 1 | **Debris Loading** | 2 |
| **Location** | Media Center | **Location** | Multipurpose Rm | **Location** | Music Rm |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 3 | 15 | 53 | 159 | 100% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |

**Total Raw Ct:** 3 **Total sp/m$^3$:** 159

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | Present | 15 | 53 | <53 | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |

**Total Raw Ct:** 0 **Total sp/m$^3$:** 0

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 2 | 15 | 53 | 106 | 100% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |

**Total Raw Ct:** 2 **Total sp/m$^3$:** 106

**Comments**

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Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 385304 | **Job Name:** | Mary Harris "Mother Jones" Elementary School | **Date Submitted:** | 01/26/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh St, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 02/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 02/02/2021 |
| **Attention:** | Courtney McCall | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **AMA Sample #** | 385304-4 | **AMA Sample #** | 385304-5 | **AMA Sample #** | 385304-6 |
| **Client ID** | 31638819 | **Client ID** | 31638821 | **Client ID** | 31060651 |
| **Analyst ID** | TLW | **Analyst ID** | TLW | **Analyst ID** | TLW |
| **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 |
| **Sample Condition** | Acceptable | **Sample Condition** | Acceptable | **Sample Condition** | Acceptable |
| **Debris Loading** | 1 | **Debris Loading** | 1 | **Debris Loading** | 1 |
| **Location** | RM 210 | **Location** | RM 301 | **Location** | RM 336 Spec Ed |

| | Raw Ct | Trav/Flds | A.S. | sp/m³ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 18 | 15 | 53 | 954 | 94.7% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | 1 | 15 | 53 | 53 | 5.3% |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 19 | **Total sp/m³:** | 1007 | | |
| **Comments** | | | | | |

| | Raw Ct | Trav/Flds | A.S. | sp/m³ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | Present | 15 | 53 | <53 | |
| Basidiospores | 1 | 15 | 53 | 53 | 25% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 3 | 15 | 53 | 159 | 75% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 4 | **Total sp/m³:** | 212 | | |
| **Comments** | | | | | |

| | Raw Ct | Trav/Flds | A.S. | sp/m³ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | 1 | 15 | 53 | 53 | 11.1% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 7 | 15 | 53 | 371 | 77.8% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | 1 | 15 | 53 | 53 | 11.1% |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 9 | **Total sp/m³:** | 477 | | |
| **Comments** | | | | | |

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# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 385304 | **Job Name:** | Mary Harris "Mother Jones" Elementary School | **Date Submitted:** | 01/26/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh St, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 02/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 02/02/2021 |
| **Attention:** | Courtney McCall | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **AMA Sample #** | 385304-7 | **AMA Sample #** | 385304-8 | **AMA Sample #** | 385304-9 |
| **Client ID** | 31638815 | **Client ID** | 31638842 | **Client ID** | 31638866 |
| **Analyst ID** | TLW | **Analyst ID** | TLW | **Analyst ID** | TLW |
| **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 |
| **Sample Condition** | Acceptable | **Sample Condition** | Acceptable | **Sample Condition** | Acceptable |
| **Debris Loading** | 1 | **Debris Loading** | 1 | **Debris Loading** | 1 |
| **Location** | RM 330 | **Location** | RM 247 Kinder | **Location** | Computer Lab |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | 1 | 15 | 53 | 53 | 33.3% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 2 | 15 | 53 | 106 | 66.7% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | 1 | 15 | 53 | 53 | 33.3% |
| **Total Raw Ct:** | 3 | | **Total sp/m$^3$:** | | 159 |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | 1 | 15 | 53 | 53 | 0.3% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 8 | 15 | 53 | 424 | 2.6% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 299 | 7 | 114 | 34086 | 97.1% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 308 | | **Total sp/m$^3$:** | | 34563 |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 2 | 15 | 53 | 106 | 40% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 2 | 15 | 53 | 106 | 40% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | 1 | 15 | 53 | 53 | 20% |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 5 | | **Total sp/m$^3$:** | | 265 |

**Comments**

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# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 385304 | **Job Name:** | Mary Harris "Mother Jones" Elementary School | **Date Submitted:** | 01/26/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh St, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 02/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 02/02/2021 |
| **Attention:** | Courtney McCall | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **AMA Sample #** | 385304-10 | **AMA Sample #** | 385304-11 | **AMA Sample #** | 385304-12 |
| **Client ID** | 31638825 | **Client ID** | 31638843 | **Client ID** | 31638813 |
| **Analyst ID** | TLW | **Analyst ID** | TLW | **Analyst ID** | TLW |
| **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 | **Sample Volume (L)** | 0 |
| **Sample Condition** | Acceptable | **Sample Condition** | Acceptable | **Sample Condition** | Acceptable |
| **Debris Loading** | 2 | **Debris Loading** | 2 | **Debris Loading** | 1 |
| **Location** | Main Office | **Location** | Ambient | **Location** | Field Blank |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | 1 | 15 | 53 | 53 | 16.7% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 2 | 15 | 53 | 106 | 33.3% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | 3 | 15 | 53 | 159 | 50% |
| Hyphal Fragments* | 1 | 15 | 53 | 53 | 16.7% |
| **Total Raw Ct:** | 6 | | **Total sp/m$^3$:** | | 318 |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | 8 | 15 | 53 | 424 | 66.7% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 1 | 15 | 53 | 53 | 8.3% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | 3 | 15 | 53 | 159 | 25% |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 12 | | **Total sp/m$^3$:** | | 636 |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Other Colorless | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 0 | | **Total sp/m$^3$:** | | 0 |

**Comments**

No mold spores observed.

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# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 385304 | **Job Name:** | Mary Harris "Mother Jones" Elementary School | **Date Submitted:** | 01/26/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh St, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 02/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 02/02/2021 |
| **Attention:** | Courtney McCall | | | | |

## Spore Comparison Guide

The criteria for these specifications are outlined, but not limited to those listed, below. Final specifications may differ from the listed criteria for certain samples. AMA Analytical Services, Inc. reserves the right to make changes to these criteria at any time without notice.

| Normal ecology | Slightly above normal ecology | Moderately above normal ecology | Substantially above normal ecology |
|---|---|---|---|

| **Stachybotrys / Memnoniella, and Chaetomium** | **Other Spores* (Control Present)** | **Other Spores* (No Control)** |
|---|---|---|
| 1-4 Spores: Yellow<br>5-9 Spores: Orange<br>10+ Spores: Red | < 10 Spores: Insignificant (no color)<br><= Control's spore count: Green<br>Between Control and 2x Control: Yellow<br>Between 2x Control and 3x Control: Orange<br>3x+ Control: Red | < 10 Spores: Insignificant (no color)<br>10-20 Spores: Yellow<br>20-50 Spores: Orange<br>50+ Spores: Red |

*No evalutation is provided for the following spore types: Other, Other Colorless, and Unknown Fungi, and Misc

Interpretation of the data contained in this report is the sole responsibility of the client or the persons who conducted the field work. There are no federal or national standards for the number of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should be comparable to those that are present outdoors at any given time. There will always be some mold spores present in "Normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

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# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 385304 | **Job Name:** | Mary Harris "Mother Jones" Elementary School | **Date Submitted:** | 01/26/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh St, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 02/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 02/02/2021 |
| **Attention:** | Courtney McCall | | | | |

## General Comments, Disclaimers, and Footnotes

**Analytical Method:** Sample are analyzed following the instructions and guidelines outlined in ASTM 7391-09.

**Sample Condition:** Acceptable: The sample was collected and delivered to the our location without disturbing the material on the sampling media.
Unacceptable: 1. The sample trace (TR) has been disturbed. 2. The sample was damaged or otherwise unsuitable for analysis.
0 = No particulate matter detected; 1= >nd-~5% Particulate Loading; 2 = ~5%-25% Particulate Loading; 3 = ~25%- 75% Particulate Loading; 4 = ~75%-90% Particulate Loading; 5 = >90% Particulate Loading

**Spore Notes:** Based on their small size and very few distinguishing characteristics, Aspergillus and Penicillium cannot be differentiated by non-viable sampling methods. There are other types of spores whose morphology is similar to Aspergillus and Penicillium and cannot be differentiated by non-viable sampling methods. Examples of these similar spores are Acremonium, Paecilomyces, Wallemia, Trichoderma, Scopulariopsis, and Gliocladium.
Smuts, Periconia and Myxomycetes are three different types of genera that have similar morphological characteristics.
Bipolaris/Dreschlera/Helm: Bipolaris / Dreschlera / Helminthosporium are three different types of genera that have smiliar morphological characteristics.
Other Colorless represents all colorless spores that are non-distinctive and unidentifiable.
*Hyphal Fragments: A portion of the mycelium that becomes separated from the remainder of the thallus (vegetative body), each of which has the capacity to grow and form new individuals. Results for hyphal fragments are in fragments/m3 and are not incorporated in the total spore concentration.
The droplet symbol (💧) refers to water-intrusion indicator spores. These fungal spores, when found on indoor air samples, can be an indication of moisture sources and resultant fungal growth that may be problematic.

**Quantification:** Analytical Sensitivity (A.S.): This is dependent on the volume of air collected, size of the trace, ocular diameter, and the amount of the trace that was analyzed.
The value of "Present" indicated in the Raw Count column represents the presence of this spore type during the preliminary exam at 400x. The Raw Count converts to a whole number if the spore type is encountered again during the 600x-1,000x enumeration. The sp/m3concentration will be reported as less than the analytical sensitivity if "Present" is reported in the Raw Count.
Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
**Analyst(s)**: Tristan Ward

**Technical Director** Tristan Ward

# MOLD SPORE DESCRIPTIONS

## Ascospores

Ascospores are spores formed inside an ascus (asci-plural) or sac-like cell which is contained inside a fruiting body called an ascocarp or an ascoma (ascomata-plural). An ascus typically contains a definite nuimber of ascospores, usually eight. Ascospores are unique in shape, size, and color as to the Genus/species they represent. These spores are specific to fungi classified as Ascomycetes. They are ubiquitous in nature. Many decay organic matter, others are plant or animal pathogens. They can grow indoors on damp materials. Release of ascospores are released by forcible ejection and dispersed by wind, water, animals and other agents. Health Effects: Depending on the Genera, Ascospores may be allergenic.

## Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

## Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

## Hyphal Fragments

Hyphal Fragments are segments or pieces of hyphae or mycelium that may have broken off during sampling (air, tape, dust). The mycelium is the entire mass of hyphae that makes up the vegetative body of a fungus. The presence of hyphal fragments may indicate the presence of viable mold.

## Memnoniella

Memnoniella is closely related Stachybotrys and they are often found growing together. Like Stachybotrys, it is a cosmopolitan fungus and commonly found in soil, plant debris as well as plants and trees. It is also cellulolytic or has the capacity to degrade cellulose and found on wet materials containing cellulose as well as other substrates. Unlike Stachybotrys, the spores form chains and not aggregated in slimy heads. Spores are spherical to sub-spherical, gray, dark brown or black in color, and smooth to rough walled. Colonies are black to blackish-green. Health Effects: Some species may produce mycotoxins with similar toxicities as some species of Stachybotrys. These mycotoxins may have the ability to infect humans and animals after ingestion, inhalation or absorption through unbroken skin.

## Other Colorless

- “Other Colorless” are all non-distinctive, unidentifiable, colorless spores seen on spore trap samples and include all the genera that do not have distinguishing morphology to belong to any of the other defined categories."

## Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

## Stachybotrys

Stachybotrys is known as black mold or toxic black mold. It is a worldwide, filamentous fungus that is commonly found growing on water damaged materials such as ceiling tiles, insulation, wallpaper, wood, and sheetrock. It is highly cellulolytic (has the capacity to degrade cellulose) and commonly isolated on wet materials containing cellulose, such as wallboard, jute carpet backing along with associated glues, straw baskets, and paper materials. The spores are slimy, ellipsoidal to, sub-spherical in shape, single-celled, gray to black in color, and smooth to rough walled. They usually form in clusters on the phialides. Colonies have a powdery to cottony texture and white in color at first, later turning dark gray to black. Health Effects: Certain species of Stachybotrys produce mycotoxins that may be harmful to human and animal after ingestion. They can cause allergic and asthmatic reactions in sensitive individuals.

**AMA Analytical Services, Inc.**
Focused on Results www.amalab.com
AIHA-LAP (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

# CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) ~~285304~~ 385304

**Mailing/Billing Information:**

1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd
3. Address 2: Suite 250
4. Address 3: Lanham MD 20706
5. Phone #: _____ Fax #: _____

**Submittal Information:**

1. Job Name: Mary Harris "Mother Jones" E.S.
2. Job Location: 2405 Tecumseh St Adelphi, MD 20783
3. Job #: 21-606 P.O. #: _____
4. Contact Person: Courtney McCall Cell: 703 399 5423
5. Collected by: Courtney McCall Cell: _____

**Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.**

| AFTER HOURS (must be pre-scheduled) | NORMAL BUSINESS HOURS | REPORT TO: |
|---|---|---|
| ☐ 4 Hours<br>☐ Immediate Date Due: _____<br>☐ 24 Hours Time Due: _____<br>Comments: _____ | ☐ 4 Hours ☐ 3 Day<br>☐ Same Day ☑ 5 Day + 2/2/21<br>☐ Next Day Date Due:<br>☐ 2 Day<br>☐ Results Required By Noon | ☑ Email: Courtney@atiinc.com<br>☐ Email 2: _____<br>☐ Verbals: _____ |

**Asbestos Analysis**

*PCM Air – Please Indicate Filter Type: _____
- ☐ NIOSH 7400 _____ (QTY)
- ☐ Fiberglass _____ (QTY)

TEM Air* – Please Indicate Filter Type: _____
- ☐ AHERA _____ (QTY)
- ☐ NIOSH 7402 _____ (QTY)
- ☐ Other (specify _____) _____ (QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate _____ (QTY) ☐ Pos Stop
- ☐ EPA Point Count _____ (QTY)
- ☐ NY State Friable 198.1 _____ (QTY)
- ☐ Grav. Reduction ELAP 198.6 _____ (QTY)
- ☐ Other (specify _____) _____ (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
- ☐ ELAP 198.4/Chatfield _____ (QTY)
- ☐ NY State PLM/TEM _____ (QTY)
- ☐ Residual Ash _____ (QTY)

TEM Dust*
- ☐ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
- ☐ Quan. (s/area)Dust D6480-99 _____ (QTY)

TEM Water
- ☐ Qual. (pres/abs) _____ (QTY)
- ☐ ELAP 198.2/EPA 100.2 _____ (QTY)
- ☐ EPA 100.1 _____ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

If field data sheets are submitted, there is no need to complete bottom section.

**Metals Analysis**
- ☐ Pb Paint Chip _____ (QTY)
- ☐ *Pb Dust Wipe (wipe type _____) _____ (QTY)
- ☐ *Pb Air _____ (QTY)
- ☐ Pb Soil/Solid _____ (QTY)
- ☐ Pb TCLP _____ (QTY)
- ☐ Drinking Water ☐ Pb _____ (QTY) ☐ Cu _____ (QTY) ☐ As _____ (QTY)
- ☐ Waste Water ☐ Pb _____ (QTY) ☐ Cu _____ (QTY) ☐ As _____ (QTY)
- ☐ Pb Furnace (Media _____) _____ (QTY)

**Fungal Analysis**

Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
- ☑ *Spore-Trap 12 (QTY) ☐ Surface Vacuum Dust _____ (QTY)
- ☐ *Surface Swab _____ (QTY) ☐ Culturable ID Genus (Media _____) _____ (QTY)
- ☐ *Surface Tape _____ (QTY) ☐ Culturable ID Species (Media _____) _____ (QTY)
- ☐ Other (Specify _____) _____ (QTY)

| CLIENT ID # | SAMPLE INFORMATION: SAMPLE LOCATION/ ID | DATE/ TIME | VOL (L)/ Wipe Area | ANALYSIS: TEM | PCM | PLM | LEAD | MOLD | MATRIX: AIR | BULK | DUST | WATER AND OTHER | SPORE TRAP | TAPE | SWAB | CLIENT CONTACT (LABORATORY STAFF ONLY) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3163 8845 | Media Center | 1/26/21 840 | 75L | | | | | X | X | | | | X | | | Date/Time: Contact:By: |
| 3163 8830 | Multipurpose Rm | 1/26/21 855 | 75L | | | | | | | | | | | | | |
| 3163 8834 | Music Room | 1/26/21 905 | 75L | | | | | | | | | | | | | |
| 3163 8819 | Room 210 | 1/26/21 914 | 75L | | | | | | | | | | | | | |
| 3163 8821 | Room 301 | 1/26/21 922 | 75L | | | | | | | | | | | | | Date/Time: Contact:By: |
| 3106 0651 | Room 336 Spec Ed | 1/26/21 930 | 75L | | | | | | | | | | | | | |
| 3163 8815 | Room 330 | 1/26/21 940 | 75L | | | | | | | | | | | | | |
| 3163 8842 | Room 247 Kinder | 1/26/21 948 | 75L | | | | | | | | | | | | | |
| 3163 8866 | Rm Computer Lab | 1/26/21 1005 | 75L | | | | | | | | | | | | | Date/Time: Contact:By: |
| 3163 8825 | Main office | 1/26/21 1015 | 75L | | | | | | | | | | | | | |
| 3163 8843 | Ambient | 1/26/21 1030 | 75L | | | | | | | | | | | | | |
| 3163 8813 | Field Blank | 1/26/21 | - | | | | | | | | | | | | | |

| | Print Name | Signature | Date | Time |
|---|---|---|---|---|
| Relinquished by: | Courtney McCall | Courtney McCall | 1/26/21 | 11:40 AM |
| Received by: | | | | |
| Relinquished by: | | | 1/26/21 | 1144 |
| Received for Lab by: | | | | |

**Shipping Information**
☐ UPS ☑ In-Person ☐ Other
☐ FedEx ☐ Drop Box
☐ USPS ☐ Courier
Airbill/Tracking No: _____

AMA Analytical Services, Inc.
Focused On Results.

Lab ID # 100470

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 625391 | **Job Name:** | Mary Harris "Mother" Jones | **Date Submitted:** | 03/01/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh Street, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/02/2021 |
| **Attention:** | Courtney McCall | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **AMA Sample #** | 625391-1 | **AMA Sample #** | 625391-2 | **AMA Sample #** | 625391-3 |
| **Client ID** | 31569986 | **Client ID** | 31569995 | **Client ID** | 31569977 |
| **Analyst ID** | MG | **Analyst ID** | MG | **Analyst ID** | MG |
| **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 |
| **Sample Condition** | Acceptable | **Sample Condition** | Acceptable | **Sample Condition** | Acceptable |
| **Debris Loading** | 1 | **Debris Loading** | 2 | **Debris Loading** | 1 |
| **Location** | Ambient | **Location** | Room 247 | **Location** | Room 210 |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | 32 | 23 | 52 | 1664 | 52.5% |
| Basidiospores | 21 | 23 | 52 | 1092 | 34.4% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 5 | 23 | 52 | 260 | 8.2% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 3 | 23 | 52 | 156 | 4.9% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 61 | **Total sp/m$^3$:** | 3172 | | |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | 7 | 23 | 52 | 364 | 5% |
| Basidiospores | 12 | 23 | 52 | 624 | 8.6% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 17 | 23 | 52 | 884 | 12.2% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 103 | 9 | 133 | 13699 | 74.1% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Hyphal Fragments* | 2 | 23 | 52 | 104 | 1.4% |
| **Total Raw Ct:** | 139 | **Total sp/m$^3$:** | 15571 | | |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | 3 | 23 | 52 | 156 | 4.6% |
| Basidiospores | 5 | 23 | 52 | 260 | 7.7% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 22 | 23 | 52 | 1144 | 33.8% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 35 | 23 | 52 | 1820 | 53.8% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 65 | **Total sp/m$^3$:** | 3380 | | |

**Comments**

AMA Analytical Services, Inc.
Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

**Chain of Custody:** 625391
**Client:** ATI, Inc.
**Address:** 9220 Rumsey Road
Suite 100
Columbia, MD 21045
**Attention:** Courtney McCall

**Job Name:** Mary Harris "Mother" Jones
**Job Location:** 2405 Tecumseh Street, Adelphi, MD 20783
**Job Number:** 21-606
**P.O. Number:** Not Provided

**Date Submitted:** 03/01/2021
**Person Submitting:** Courtney McCall
**Date Analyzed:** 03/01/2021
**Report Date:** 03/02/2021

| | |
|---|---|
| **AMA Sample #** | 625391-4 |
| **Client ID** | 31570018 |
| **Analyst ID** | MG |
| **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 0 |
| **Sample Condition** | Acceptable |
| **Debris Loading** | 0 |
| **Location** | Field Blank |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 0 | | **Total sp/m$^3$:** | 0 | |

**Comments**
No mold spores observed.

AMA Analytical Services, Inc.
Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 625391 | **Job Name:** | Mary Harris "Mother" Jones | **Date Submitted:** | 03/01/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh Street, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/02/2021 |
| **Attention:** | Courtney McCall | | | | |

## Spore Comparison Guide

The criteria for these specifications are outlined, but not limited to those listed, below. Final specifications may differ from the listed criteria for certain samples. AMA Analytical Services, Inc. reserves the right to make changes to these criteria at any time without notice.

| Normal ecology | Slightly above normal ecology | Moderately above normal ecology | Substantially above normal ecology |
|---|---|---|---|

| **Stachybotrys / Memnoniella, and Chaetomium** | **Other Spores* (Control Present)** | **Other Spores* (No Control)** |
|---|---|---|
| 1-4 Spores: Yellow<br>5-9 Spores: Orange<br>10+ Spores: Red | < 10 Spores: Insignificant (no color)<br><= Control's spore count: Green<br>Between Control and 2x Control: Yellow<br>Between 2x Control and 3x Control: Orange<br>3x+ Control: Red | < 10 Spores: Insignificant (no color)<br>10-20 Spores: Yellow<br>20-50 Spores: Orange<br>50+ Spores: Red |

*No evalutation is provided for the following spore types: Other, Other Colorless, and Unknown Fungi, and Misc

Interpretation of the data contained in this report is the sole responsibility of the client or the persons who conducted the field work. There are no federal or national standards for the number of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should be comparable to those that are present outdoors at any given time. There will always be some mold spores present in "Normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

AMA Analytical Services, Inc.
Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 625391 | **Job Name:** | Mary Harris "Mother" Jones | **Date Submitted:** | 03/01/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | 2405 Tecumseh Street, Adelphi, MD 20783 | **Person Submitting:** | Courtney McCall |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/01/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/02/2021 |
| **Attention:** | Courtney McCall | | | | |

## General Comments, Disclaimers, and Footnotes

**Analytical Method:** Sample are analyzed following the instructions and guidelines outlined in ASTM 7391-09.

**Sample Condition:** Acceptable: The sample was collected and delivered to the our location without disturbing the material on the sampling media.
Unacceptable: 1. The sample trace (TR) has been disturbed. 2. The sample was damaged or otherwise unsuitable for analysis.
0 = No particulate matter detected; 1= >nd-~5% Particulate Loading; 2 = ~5%-25% Particulate Loading; 3 = ~25%- 75% Particulate Loading; 4 = ~75%-90% Particulate Loading; 5 = >90% Particulate Loading

**Spore Notes:** Based on their small size and very few distinguishing characteristics, Aspergillus and Penicillium cannot be differentiated by non-viable sampling methods. There are other types of spores whose morphology is similar to Aspergillus and Penicillium and cannot be differentiated by non-viable sampling methods. Examples of these similar spores are Acremonium, Paecilomyces, Wallemia, Trichoderma, Scopulariopsis, and Gliocladium.
Smuts, Periconia and Myxomycetes are three different types of genera that have similar morphological characteristics.
Bipolaris/Dreschlera/Helm: Bipolaris / Dreschlera / Helminthosporium are three different types of genera that have smiliar morphological characteristics.
Other Colorless represents all colorless spores that are non-distinctive and unidentifiable.
*Hyphal Fragments: A portion of the mycelium that becomes separated from the remainder of the thallus (vegetative body), each of which has the capacity to grow and form new individuals. Results for hyphal fragments are in fragments/m3 and are not incorporated in the total spore concentration.
The droplet symbol (💧) refers to water-intrusion indicator spores. These fungal spores, when found on indoor air samples, can be an indication of moisture sources and resultant fungal growth that may be problematic.

**Quantification:** Analytical Sensitivity (A.S.): This is dependent on the volume of air collected, size of the trace, ocular diameter, and the amount of the trace that was analyzed.
The value of "Present" indicated in the Raw Count column represents the presence of this spore type during the preliminary exam at 400x. The Raw Count converts to a whole number if the spore type is encountered again during the 600x-1,000x enumeration. The sp/m3concentration will be reported as less than the analytical sensitivity if "Present" is reported in the Raw Count.
Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
**Analyst(s)**: Michael Greenberg

**Technical Director** Tristan Ward

# MOLD SPORE DESCRIPTIONS

## Ascospores

Ascospores are spores formed inside an ascus (asci-plural) or sac-like cell which is contained inside a fruiting body called an ascocarp or an ascoma (ascomata-plural). An ascus typically contains a definite nuimber of ascospores, usually eight. Ascospores are unique in shape, size, and color as to the Genus/species they represent. These spores are specific to fungi classified as Ascomycetes. They are ubiquitous in nature. Many decay organic matter, others are plant or animal pathogens. They can grow indoors on damp materials. Release of ascospores are released by forcible ejection and dispersed by wind, water, animals and other agents. Health Effects: Depending on the Genera, Ascospores may be allergenic.

## Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

## Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

## Hyphal Fragments

Hyphal Fragments are segments or pieces of hyphae or mycelium that may have broken off during sampling (air, tape, dust). The mycelium is the entire mass of hyphae that makes up the vegetative body of a fungus. The presence of hyphal fragments may indicate the presence of viable mold.

## Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

MINUTEMAN PRESS 410-590-5555 431417

**AMA Analytical Services, Inc.**
Focused on Results www.amalab.com
AIHA-LAP (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

# CHAIN OF CUSTODY

(Please Refer To This Number For Inquiries) 625391

**Mailing/Billing Information:**
1. Client Name: ATI Inc.
2. Address 1: 4221 Forbes Blvd
3. Address 2: Suite 250
4. Address 3: Lanham, MD 20706
5. Phone #: _____ Fax #: _____

**Submittal Information:**
1. Job Name: Mary Harris "Mother" Jones
2. Job Location: 2405 Tecumseh St, Adelphi, MD 20783
3. Job #: 21-606 P.O. #: _____
4. Contact Person: Courtney McCall Cell: 703 399 5423
5. Collected by: Courtney McCall Cell: _____

**Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email to contacts on file.**

| AFTER HOURS (must be pre-scheduled) | NORMAL BUSINESS HOURS | REPORT TO: |
|---|---|---|
| ❑ 4 Hours ❑ Late Night<br>❑ Immediate Date Due: _____<br>❑ 24 Hours Time Due: _____<br>Comments: _____ | ❑ 4 Hours ❑ 3 Day<br>❑ Same Day ❑ 5 Day +<br>☑ Next Day Date Due: 3/2/21<br>❑ 2 Day<br>❑ Results Required By Noon (Additional fee may apply) | ☑ Email: courtney@atiinc.com<br>❑ Email 2: _____<br>❑ Verbals: _____ |

**Asbestos Analysis**
*PCM Air – Please Indicate Filter Type: _____
❑ NIOSH 7400 _____ (QTY)
❑ Fiberglass _____ (QTY)
TEM Air* – Please Indicate Filter Type: _____
❑ AHERA _____ (QTY)
❑ NIOSH 7402 _____ (QTY)
❑ Other (specify _____) _____ (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate _____ (QTY) ❑ Pos Stop
❑ EPA Point Count _____ (QTY)
❑ NY State Friable 198.1 _____ (QTY)
❑ Grav. Reduction ELAP 198.6 _____ (QTY)
❑ Other (specify _____) _____ (QTY)
MISC
❑ Asbestos Soil ASTM D7521 PLM ____ (Qual) PLM ____ (Quan) PLM/TEM ____ (Qual) PLM/TEM ____ (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
❑ ELAP 198.4/Chatfield _____ (QTY)
❑ NY State PLM/TEM _____ (QTY)
❑ Residual Ash _____ (QTY)
❑ Vermiculite _____ (QTY)
TEM Dust*
❑ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
❑ Quan. (s/area)Dust D6480-99 _____ (QTY)
TEM Water
❑ Qual. (pres/abs) _____ (QTY)
❑ ELAP 198.2/EPA 100.2 _____ (QTY)
❑ EPA 100.1 _____ (QTY)

All samples received in good condition unless otherwise noted.
Lab use only (TEM Water samples _____ °C)
If field data sheets are submitted, there is no need to complete bottom section.

**Metals Analysis**
❑ Pb Paint Chip ❑ % by Weight ____ (QTY) ❑ mg/cm² ____ (QTY)
❑ *Pb Dust Wipe (wipe type _____) _____ (QTY)
❑ *Pb Air _____ (QTY)
❑ Pb Soil/Solid _____ (QTY)
❑ Pb TCLP _____ (QTY)
❑ Drinking Water ❑ Pb ____ (QTY) ❑ Cu ____ (QTY)
❑ Waste Water ❑ Pb ____ (QTY) ❑ Cu ____ (QTY)
❑ Pb Furnace (Media _____) _____ (QTY)

**Fungal Analysis**
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media: _____
☑ *Spore-Trap 4 (QTY) ❑ Surface Vacuum Dust ____ (QTY)
❑ *Surface Swab ____ (QTY)
❑ *Surface Tape ____ (QTY)
❑ Other (Specify ____) ____ (QTY)

| SAMPLE INFORMATION CLIENT ID # | SAMPLE LOCATION/ ID | DATE/ TIME | VOL (L)/ Wipe Area | ANALYSIS TEM | PCM | PLM | LEAD | MOLD | AIR | MATRIX BULK | DUST | WATER AND OTHER | SPORE TRAP | TAPE | SWAB | COMMENTS / SPECIAL INSTRUCTIONS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3156 9986 | Ambient | 2/27/21 11:05 | 75L | | | | | ✓ | ✓ | | | | ✓ | | | |
| 3156 9995 | Room 247 | 2/27/21 11:12 | 75L | | | | | ✓ | ✓ | | | | ✓ | | | |
| 3156 9977 | Room 210 | 2/27/21 11:28 | 75L | | | | | ✓ | ✓ | | | | ✓ | | | |
| 3157 0018 | Field Blank | 2/27/21 | 75L | | | | | ✓ | ✓ | | | | ✓ | | | |
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| | Print Name | Signature | Date | Time |
|---|---|---|---|---|
| Relinquished by: | Courtney McCall | Courtney McCall | 2/25/21 | 1129 AM |
| Received by: | | | 3/1/21 | 0800 |

Shipping Information: ❑ UPS ❑ In-Person ❑ Other ❑ FedEx ❑ Drop Box ❑ USPS ❑ Courier

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# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 285284 | **Job Name:** | PGCPS | **Date Submitted:** | 03/08/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | Marry Harris "Mother" Jones Elementary School | **Person Submitting:** | Sama W. |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/08/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/08/2021 |
| **Attention:** | Courtney McCall | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **AMA Sample #** | 285284-1 | **AMA Sample #** | 285284-2 | **AMA Sample #** | 285284-3 |
| **Client ID** | 3214-0830 | **Client ID** | 3214-0777 | **Client ID** | 3214-0769 |
| **Analyst ID** | TLW | **Analyst ID** | TLW | **Analyst ID** | TLW |
| **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell | **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 | **Sample Volume (L)** | 75 |
| **Sample Condition** | Acceptable | **Sample Condition** | Acceptable | **Sample Condition** | Acceptable |
| **Debris Loading** | 2 | **Debris Loading** | 1 | **Debris Loading** | 1 |
| **Location** | Outside | **Location** | RM 247 | **Location** | RM 210 |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | 2 | 15 | 53 | 106 | 66.7% |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 1 | 15 | 53 | 53 | 33.3% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 3 | **Total sp/m$^3$:** | 159 | | |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | 2 | 15 | 53 | 106 | 20% |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 8 | 15 | 53 | 424 | 80% |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 10 | **Total sp/m$^3$:** | 530 | | |

**Comments**

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | 4 | 15 | 53 | 212 | 100% |
| Smuts/Periconia/Myxomycetes | Present | 15 | 53 | <53 | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 4 | **Total sp/m$^3$:** | 212 | | |

**Comments**
No visible trace.

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# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 285284 | **Job Name:** | PGCPS | **Date Submitted:** | 03/08/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | Marry Harris "Mother" Jones Elementary School | **Person Submitting:** | Sama W. |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/08/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/08/2021 |
| **Attention:** | Courtney McCall | | | | |

| | |
|---|---|
| **AMA Sample #** | 285284-4 |
| **Client ID** | 3214-0775 |
| **Analyst ID** | TLW |
| **Collection Apparatus** | Air-O-Cell |
| **Sample Volume (L)** | 0 |
| **Sample Condition** | Acceptable |
| **Debris Loading** | 1 |
| **Location** | Field Blank |

| | Raw Ct | Trav/Flds | A.S. | sp/m$^3$ | % |
|---|---|---|---|---|---|
| Alternaria | | | | | |
| Ascospores | | | | | |
| Basidiospores | | | | | |
| Bipolaris/Drechslera/Helm. | | | | | |
| Chaetomium | | | | | |
| Cladosporium | | | | | |
| Curvularia | | | | | |
| Penicillium / Aspergillus | | | | | |
| Smuts/Periconia/Myxomycetes | | | | | |
| Stachybotrys/Memnoniella | | | | | |
| Ulocladium | | | | | |
| Unknown | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Hyphal Fragments* | | | | | |
| **Total Raw Ct:** | 0 | | **Total sp/m$^3$:** | 0 | |

**Comments**

No mold spores observed.

AMA Analytical Services, Inc.
Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 285284 | **Job Name:** | PGCPS | **Date Submitted:** | 03/08/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | Marry Harris "Mother" Jones Elementary School | **Person Submitting:** | Sama W. |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/08/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/08/2021 |
| **Attention:** | Courtney McCall | | | | |

## Spore Comparison Guide

The criteria for these specifications are outlined, but not limited to those listed, below. Final specifications may differ from the listed criteria for certain samples. AMA Analytical Services, Inc. reserves the right to make changes to these criteria at any time without notice.

| Normal ecology | Slightly above normal ecology | Moderately above normal ecology | Substantially above normal ecology |
|---|---|---|---|

| **Stachybotrys / Memnoniella, and Chaetomium** | **Other Spores* (Control Present)** | **Other Spores* (No Control)** |
|---|---|---|
| 1-4 Spores: Yellow<br>5-9 Spores: Orange<br>10+ Spores: Red | < 10 Spores: Insignificant (no color)<br><= Control's spore count: Green<br>Between Control and 2x Control: Yellow<br>Between 2x Control and 3x Control: Orange<br>3x+ Control: Red | < 10 Spores: Insignificant (no color)<br>10-20 Spores: Yellow<br>20-50 Spores: Orange<br>50+ Spores: Red |

*No evalutation is provided for the following spore types: Other, Other Colorless, and Unknown Fungi, and Misc

Interpretation of the data contained in this report is the sole responsibility of the client or the persons who conducted the field work. There are no federal or national standards for the number of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should be comparable to those that are present outdoors at any given time. There will always be some mold spores present in "Normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

AMA Analytical Services, Inc.
Focused On Results.

# CERTIFICATE OF ANALYSIS

## ASTM D7391-09 Spore Trap Analysis Report

| | | | | | |
|---|---|---|---|---|---|
| **Chain of Custody:** | 285284 | **Job Name:** | PGCPS | **Date Submitted:** | 03/08/2021 |
| **Client:** | ATI, Inc. | **Job Location:** | Marry Harris "Mother" Jones Elementary School | **Person Submitting:** | Sama W. |
| **Address:** | 9220 Rumsey Road<br>Suite 100<br>Columbia, MD 21045 | **Job Number:** | 21-606 | **Date Analyzed:** | 03/08/2021 |
| | | **P.O. Number:** | Not Provided | **Report Date:** | 03/08/2021 |
| **Attention:** | Courtney McCall | | | | |

## General Comments, Disclaimers, and Footnotes

**Analytical Method:** Sample are analyzed following the instructions and guidelines outlined in ASTM 7391-09.

**Sample Condition:** Acceptable: The sample was collected and delivered to the our location without disturbing the material on the sampling media.
Unacceptable: 1. The sample trace (TR) has been disturbed. 2. The sample was damaged or otherwise unsuitable for analysis.
0 = No particulate matter detected; 1= >nd-~5% Particulate Loading; 2 = ~5%-25% Particulate Loading; 3 = ~25%- 75% Particulate Loading; 4 = ~75%-90% Particulate Loading; 5 = >90% Particulate Loading

**Spore Notes:** Based on their small size and very few distinguishing characteristics, Aspergillus and Penicillium cannot be differentiated by non-viable sampling methods. There are other types of spores whose morphology is similar to Aspergillus and Penicillium and cannot be differentiated by non-viable sampling methods. Examples of these similar spores are Acremonium, Paecilomyces, Wallemia, Trichoderma, Scopulariopsis, and Gliocladium.
Smuts, Periconia and Myxomycetes are three different types of genera that have similar morphological characteristics.
Bipolaris/Dreschlera/Helm: Bipolaris / Dreschlera / Helminthosporium are three different types of genera that have smiliar morphological characteristics.
Other Colorless represents all colorless spores that are non-distinctive and unidentifiable.
*Hyphal Fragments: A portion of the mycelium that becomes separated from the remainder of the thallus (vegetative body), each of which has the capacity to grow and form new individuals. Results for hyphal fragments are in fragments/m3 and are not incorporated in the total spore concentration.
The droplet symbol (💧) refers to water-intrusion indicator spores. These fungal spores, when found on indoor air samples, can be an indication of moisture sources and resultant fungal growth that may be problematic.

**Quantification:** Analytical Sensitivity (A.S.): This is dependent on the volume of air collected, size of the trace, ocular diameter, and the amount of the trace that was analyzed.
The value of "Present" indicated in the Raw Count column represents the presence of this spore type during the preliminary exam at 400x. The Raw Count converts to a whole number if the spore type is encountered again during the 600x-1,000x enumeration. The sp/m3concentration will be reported as less than the analytical sensitivity if "Present" is reported in the Raw Count.
Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
**Analyst(s)**: Tristan Ward

**Technical Director** Tristan Ward

# MOLD SPORE DESCRIPTIONS

## Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

## Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

## Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

## Smuts/Periconia/Myxomycetes

Smuts, Periconia, and Myxomycetes spores are grouped together due to their similar round, brown morphology. Smuts are outdoor parasitic plant pathogens. They rarely grow indoors but may grow on host plants if appropriate conditions are present. They are parasitic plant pathogens. They can be found on cereal crops, grasses, flowing plants, weed, and other fungi. They can cause allergies. Periconia are found in soils, dead herbaceous stems and leaf spots, and grasses. They have wind dispersed dry spores. Their spores are abundant in the air but it is not known if they are allergenic. Myxomycetes are found on decaying logs, stumps and dead leaves. They have wind-dispersed dry spores and wet motile (amoebic phase) spores. During favorable conditions they move about like amoebae. They form dry airborne spores when conditions are unfavorable. They are rarely found indoors. Health Effects: They may cause Type 1 allergies (hay fever, asthma). No human infections have been reported.

**AMA Analytical Services, Inc.**
Focused on Results www.amalab.com
AIHA-LAP (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

PRIORITY

# CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 285284

**Mailing/Billing Information:**
1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd
3. Address 2: Lanham MD 20706
4. Address 3:
5. Phone #: 202-643-4283 Fax #:

**Submittal Information:**
1. Job Name: PGCPS "
2. Job Location: Mary Harris "Mother" Jones ES.
3. Job #: 21-606 P.O. #:
4. Contact Person: Courtney McCall Cell: 703-395-5423
5. Collected by: Sana W. Cell: 240-413-3728

**Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.**

**AFTER HOURS (must be pre-scheduled)**
- ☐ 4 Hours
- ☐ Immediate Date Due:
- ☐ 24 Hours Time Due:
- Comments:

**NORMAL BUSINESS HOURS**
- ☐ 4 Hours
- ☐ Same Day
- ☒ Next Day
- ~~☐ 2 Day~~
- ☐ 3 Day
- ☐ 5 Day +
- Date Due: 3/9/21
- ☒ Results Required By Noon

**REPORT TO:**
- ☒ Email: Courtney@atiinc.com
- ☐ Email 2:
- ☐ Verbals:

**Asbestos Analysis**
*PCM Air – Please Indicate Filter Type:
- ☐ NIOSH 7400 (QTY)
- ☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
- ☐ AHERA (QTY)
- ☐ NIOSH 7402 (QTY)
- ☐ Other (specify) (QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate (QTY) ☐ Pos Stop
- ☐ EPA Point Count (QTY)
- ☐ NY State Friable 198.1 (QTY)
- ☐ Grav. Reduction ELAP 198.6 (QTY)
- ☐ Other (specify) (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
- ☐ ELAP 198.4/Chatfield (QTY)
- ☐ NY State PLM/TEM (QTY)
- ☐ Residual Ash (QTY)

TEM Dust*
- ☐ Qual. (pres/abs) Vacuum/Dust (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 (QTY)
- ☐ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
- ☐ Qual. (pres/abs) (QTY)
- ☐ ELAP 198.2/EPA 100.2 (QTY)
- ☐ EPA 100.1 (QTY)

☐ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

**Metals Analysis**
- ☐ Pb Paint Chip (QTY)
- ☐ *Pb Dust Wipe (wipe type) (QTY)
- ☐ *Pb Air (QTY)
- ☐ Pb Soil/Solid (QTY)
- ☐ Pb TCLP (QTY)
- ☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
- ☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
- ☐ Pb Furnace (Media ) (QTY)

**Fungal Analysis**
Collection Apparatus for Spore Traps/Air Samples: AIV
Collection Media AIV-0 cell
- ☒ *Spore-Trap 4 (QTY) ☐ Surface Vacuum Dust (QTY)
- ☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media ) (QTY)
- ☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media ) (QTY)
- ☐ Other (Specify ) (QTY

| CLIENT ID # | SAMPLE INFORMATION SAMPLE LOCATION/ ID | DATE/ TIME | VOL (L)/ Wipe Area | ANALYSIS: TEM | PCM | PLM | LEAD | MOLD | MATRIX: AIR | BULK | DUST | WATER AND OTHER | SPORE TRAP | TAPE | SWAB | CLIENT CONTACT (LABORATORY STAFF ONLY) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Date/Time: Contact:By: |
| 3214-0830 | Outside | 03/06/21 | 75 | | | | ✓ | ✓ | | | | | ✓ | | | |
| 3214-0777 | Room 247 | " | " | | | | | ✓ | | | | | ✓ | | | |
| 3214-0769 | Room 210 | " | " | | | | | ✓ | | | | | ✓ | | | |
| 3214-0775 | Field Blank | — | — | | | | | — | | | | | — | | | Date/Time: Contact:By: |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | Date/Time: Contact:By: |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | Print Name | Signature | Date | Time |
|---|---|---|---|---|
| Relinquished by: | Don Sana W. | | 03/06/21 | |
| Received by: | | | | |
| Relinquished by: | | | | |
| Received for Lab by: | | | 3/8/21 | 0820 |

**Shipping Information**
☐ UPS ☒ In-Person ☐ Other
☐ Fedex ☒ Drop Box
☐ USPS ☐ Courier
Airbill/Tracking No:

# Appendix B: Instrument Calibration Records

# Certificate of Calibration

## (✓) Buck™ BioAire Pump Calibration Rotameter
## ( ) Buck™ BioSlide Pump Calibration Rotameter

**Serial number:** R15042
**Date Calibrated:** 11/12/2020 **Calibration Due Date:** 11/12/2021

**Flow Calibration**

This is to certify that the rotameter listed above has been calibrated using a Buck Primary calibrator listed below which is calibrated according to A.P. Buck, Inc. calibration procedure APB-1, Ver. 6.2 and is traceable to the National Institute of Standards & Technology (N.I.S.T). A.P. Buck guarantees the accuracy of the rotameter to be within ± 5% of the actual flow rate.

AMBIENT CONDITIONS: Temperature 74±3° F Relative Humidity 50±10%

| Description | MFR. | Model | Serial # |
|---|---|---|---|
| Primary Calibrator | A.P. Buck Inc. | M30B | ☐ A40020<br>☑ A40021 |

**QA Approval By:** Moroni Menk



A.P. BUCK, INC.
7101 Presidents Drive, Suite 110
Orlando, FL 32809
Phone: 407-851-8602
Fax: 407-851-8910

BUCK

# CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

| ENVIRONMENT CONDITIONS | | |
|---|---|---|
| TEMPERATURE | 71.33 (21.9) | °F (°C) |
| RELATIVE HUMIDITY | 53.9 | %RH |
| BAROMETRIC PRESSURE | 28.81 (975.6) | inHg (hPa) |

| | |
|---|---|
| MODEL | 7575-X |
| SERIAL NUMBER | 7575X1711004 |

☒ AS LEFT ☐ AS FOUND

☒ IN TOLERANCE ☐ OUT OF TOLERANCE

## – CALIBRATION VERIFICATION RESULTS –

**THERMO COUPLE** — SYSTEM PRESSURE01-02 — *Unit: °F ( °C )*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 70.9 (21.6) | 71.1 (21.7) | 68.9~72.9 (20.5~22.7) | | | | |

**BAROMETRIC PRESSURE** — SYSTEM PRESSURE01-02 — *Unit: inHg ( hPa )*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 28.82 (976.0) | 28.82 (976.0) | 28.24~29.40 (956.3~995.6) | | | | |

*TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.*

| Measurement Variable | System ID | Last Cal. | Cal. Due | Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|---|---|
| Temperature | E004626 | 02-14-20 | 02-28-21 | Pressure | E005254 | 10-10-19 | 10-31-20 |
| Pressure | E003982 | 07-21-20 | 01-31-21 | DC Voltage | E003493 | 06-17-20 | 06-30-21 |

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Doc. ID: CERT_GEN_WCC

TSI P/N 2300157

# CERTIFICATE OF CALIBRATION AND TESTING

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Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

| ENVIRONMENT CONDITIONS | | |
|---|---|---|
| TEMPERATURE | 75.8 (24.3) | °F (°C) |
| RELATIVE HUMIDITY | 48 | %RH |
| BAROMETRIC PRESSURE | 28.72 (972.6) | inHg (hPa) |

| | |
|---|---|
| MODEL | 982 |
| SERIAL NUMBER | P17100006 |

☐ AS LEFT ☐ IN TOLERANCE
☒ AS FOUND ☒ OUT OF TOLERANCE

## – CALIBRATION VERIFICATION RESULTS –

**GAS $CO_2$ AS FOUND** — SYSTEM G-101 — *Unit: ppm*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0~50 | 4 | 3020.5 | * 2874.5 | 2929.9~3111.1 |
| 2 | 504 | 460 | 454~554 | 5 | 5037 | * 4771.8 | 4885.9~5188.1 |
| 3 | 1008 | 964 | 958~1058 | | | | |

**GAS CO AS FOUND** — SYSTEM G-101 — *Unit: ppm*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 35.3 | * 30.8 | 32.3~38.3 | 2 | 100.7 | * 87.7 | 97.7~103.7 |

**TEMPERATURE AS FOUND** — SYSTEM T-101 — *Unit: °F ( °C )*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 32.0 (0.0) | 32.6 (0.3) | 31.0~33.0 (−0.5~0.6) | 2 | 139.8 (59.9) | 140.6 (60.3) | 138.8~140.8 (59.4~60.5) |

**HUMIDITY AS FOUND** — SYSTEM H-102 — *Unit: %RH*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 10.0 | 10.5 | 7.0~13.0 | 4 | 70.0 | 69.6 | 67.0~73.0 |
| 2 | 30.0 | 30.4 | 27.0~33.0 | 5 | 90.0 | 88.9 | 87.0~93.0 |
| 3 | 50.0 | 50.4 | 47.0~53.0 | | | | |

**Indicates Out-of-Tolerance Condition*

*TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.*

| Measurement Variable | System ID | Last Cal. | Cal. Due | Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|---|---|
| 5000 $CO_2$ | T-0660 | 07-15-20 | 07-15-28 | 200 CO | 149848 | 03-24-20 | 03-24-28 |
| N2 | CT308798 | 06-28-20 | 06-28-28 | Air | T608955 | 06-17-20 | 06-17-28 |
| Flow | E003341 | 09-03-19 | 09-30-20 | Flow | E003980 | 04-22-20 | 04-30-21 |
| Flow | E003525 | 01-06-20 | 01-31-21 | Flow | E003342 | 09-03-19 | 09-30-20 |
| 2000 C4H8 | EB0054467 | 08-13-19 | 08-12-22 | 100 C4H8 | CC507339 | 03-24-20 | 03-24-28 |
| Temperature | E010657 | 02-14-20 | 02-28-21 | Temperature | E010658 | 02-14-20 | 02-28-21 |
| Temperture | E010655 | 01-21-20 | 01-31-21 | Humidity | E003539 | 08-21-20 | 02-28-21 |

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August 31, 2020
DATE

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| ENVIRONMENT CONDITIONS | | |
|---|---|---|
| TEMPERATURE | 71.33 (21.9) | °F (°C) |
| RELATIVE HUMIDITY | 53.9 | %RH |
| BAROMETRIC PRESSURE | 28.81 (975.6) | inHg (hPa) |

| | |
|---|---|
| MODEL | 982 |
| SERIAL NUMBER | P17100006 |

☒ AS LEFT ☐ AS FOUND

☒ IN TOLERANCE ☐ OUT OF TOLERANCE

## – CALIBRATION VERIFICATION RESULTS –

**TEMPERATURE VERIFICATION** — SYSTEM T-101 — *Unit: °F ( °C )*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 32.0 (0.0) | 32.6 (0.3) | 31.0~33.0 (−0.5~0.6) | 2 | 139.8 (59.9) | 140.6 (60.3) | 138.8~140.8 (59.4~60.5) |

**HUMIDITY VERIFICATION** — SYSTEM H-102 — *Unit: %RH*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 10.0 | 10.5 | 7.0~13.0 | 4 | 70.0 | 69.6 | 67.0~73.0 |
| 2 | 30.0 | 30.4 | 27.0~33.0 | 5 | 90.0 | 88.9 | 87.0~93.0 |
| 3 | 50.0 | 50.4 | 47.0~53.0 | | | | |

**$CO_2$ GAS VERIFICATION** — SYSTEM G-101 — *Unit: ppm*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0~50 | 4 | 3020 | 3025 | 2929~3110 |
| 2 | 504 | 501 | 454~554 | 5 | 5037 | 5026 | 4886~5188 |
| 3 | 1008 | 1027 | 958~1058 | | | | |

**CO GAS VERIFICATION** — SYSTEM G-101 — *Unit: ppm*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 35 | 36 | 32~38 | 2 | 101 | 100 | 98~104 |

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| Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|
| Temperature | E010657 | 02-14-20 | 02-28-21 |
| Temperture | E010655 | 01-21-20 | 01-31-21 |
| 5000 $CO_2$ | T-0660 | 07-15-20 | 07-15-28 |
| $N_2$ | CT308798 | 06-28-20 | 06-28-28 |
| Flow | E003341 | 09-03-19 | 09-30-20 |
| Flow | E003525 | 01-06-20 | 01-31-21 |
| 2000 C4H8 | EB0054467 | 08-13-19 | 08-12-22 |

| Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|
| Temperature | E010658 | 02-14-20 | 02-28-21 |
| Humidity | E003539 | 08-21-20 | 02-28-21 |
| 200 CO | 149848 | 03-24-20 | 03-24-28 |
| Air | T608955 | 06-17-20 | 06-17-28 |
| Flow | E003980 | 04-22-20 | 04-30-21 |
| Flow | E003342 | 09-03-19 | 09-30-20 |
| 100 C4H8 | CC507339 | 03-24-20 | 03-24-28 |

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| ENVIRONMENT CONDITIONS | | |
|---|---|---|
| TEMPERATURE | 71.24 (21.8) | °F (°C) |
| RELATIVE HUMIDITY | 54.8 | %RH |
| BAROMETRIC PRESSURE | 28.74 (973.2) | inHg (hPa) |

| | |
|---|---|
| MODEL | 7575-X |
| SERIAL NUMBER | 7575X1711004 |

☐ AS LEFT ☒ IN TOLERANCE
☒ AS FOUND ☐ OUT OF TOLERANCE

## – CALIBRATION VERIFICATION RESULTS –

**THERMO COUPLE** — **SYSTEM PRESSURE01-02** — *Unit: °F ( °C )*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 70.8 (21.6) | 70.5 (21.4) | 68.8~72.8 (20.4~22.7) | | | | |

**BAROMETRIC PRESSURE** — **SYSTEM PRESSURE01-02** — *Unit: inHg ( hPa )*

| # | STANDARD | MEASURED | ALLOWABLE RANGE | # | STANDARD | MEASURED | ALLOWABLE RANGE |
|---|---|---|---|---|---|---|---|
| 1 | 28.75 (973.6) | 28.84 (976.6) | 28.17~29.33 (953.9~993.2) | | | | |

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| Measurement Variable | System ID | Last Cal. | Cal. Due | Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|---|---|
| Temperature | E004626 | 02-14-20 | 02-28-21 | Pressure | E005254 | 10-10-19 | 10-31-20 |
| Pressure | E003982 | 07-21-20 | 01-31-21 | DC Voltage | E003493 | 06-17-20 | 06-30-21 |

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